



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

AUG 26 2004

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Christopher T. Penny  
Project Coordinator  
Installation Restoration Section (South)  
Environmental Program Branch  
Environmental Division,  
Atlantic Division (LANTDIV), Code 182  
Naval Facilities Engineering Command  
6506 Hampton Blvd.  
Norfolk, VA 23508-1278

Re: Atlantic Fleet Weapons Training Facility (AFWTF) - EPA I.D.# PRD980536221  
Draft Phase I RCRA Facility Investigation (RFI) Report and Draft Groundwater Baseline  
Investigation at U.S. Navy's Eastern Maneuver Area Report

Dear Mr. Penny:

The United States Environmental Protection Agency (EPA) has completed its review of the *Draft Phase I RCRA Facility Investigation (RFI) Report* ("the Phase I RFI Report") and the *Draft Groundwater Baseline Investigation at U.S. Navy's Eastern Maneuver Area Report* ("the Groundwater Baseline Report") submitted on the Navy's behalf by your consultant, CH2MHill, on June 10, 2004. These documents were developed pursuant to the requirements of the January 2000 RCRA Section 3008(h) Administrative Order ("the Order") between the Navy and EPA. This letter is addressed to you as the Navy's designated Project Coordinator, pursuant to Section IX of the Order.

EPA's review has indicated that neither report is fully acceptable. Enclosed with this letter are comments by various programs within EPA Region 2 and the Puerto Rico Environmental Quality Board (PREQB). In addition to the enclosed comments, EPA has the several additional comments which are discussed below.

The title for Section 14 (Assessment of PIs and PAOCs) and Section 14.3 (Summary of Recommendations for the PI and PAOC sites) of the Phase I RFI Report should be changed as it also includes recommendations for the SWMUs and AOCs required to be investigated under the June 2003 approved Phase I RFI Work Plan. Alternatively, a new section on conclusions and recommendations for the SWMUs and AOCs may be added to the Phase I RFI report, and the recommendations for the SWMUs and AOCs given in Section 14.3 should then be moved to that new section.

In the "Executive Summary" and Section 14 (Assessment of PIs and PAOCs) of the RFI Report, and elsewhere, it is stated that certain of the photo identified ("PI") and potential area of concern ("PAOC") sites will be addressed under the Navy's Munitions Response Program (MRP), and others will be addressed under the RFI program, i.e., under the RCRA corrective action process and/or equivalent processes under CERCLA (a/k/a "Superfund"). Please be advised that EPA's position regarding used munitions left on the former AFWTF range, which has recently been affirmed by Mr. William Frank of EPA's Federal Facilities Enforcement Office, is now and has been, that, consistent with its position regarding lead shot on private ranges, when a military range is closed (i.e., put to a use inconsistent with a range), then any remaining fired or used munitions have been discarded and, therefore, are a solid waste for RCRA statutory purposes.

Therefore, the munitions left on the former AFWTF range, even if addressed under the Navy's Munitions Response Program, are not eligible for the exemption at 40 CFR § 266.202(a) from being a solid waste. Moreover, such wastes could be subject to corrective action under the statutory requirements of Section 3008(h) of RCRA and 40 CFR § 264.101, and/or CERCLA. In addition, any hazardous constituents that may have been released by such wastes are also subject to the corrective action requirements of RCRA. Accordingly, the "Executive Summary" and Section 14 of the RFI Report, and elsewhere in that report where necessary, should be revised to make clear that having PI and PAOCs sites addressed under the Navy's Munitions Response Program does not necessarily exempt those PI and PAOCs sites from the statutory requirements of Section 3008(h) of RCRA and 40 CFR § 264.101, and/or CERCLA.

Also, several key documents cited in the Phase I RFI and Groundwater Baseline reports have not been approved by EPA, nor have comments on those documents made by EPA, as well as the Puerto Rico Environmental Quality Board (PREQB) and the U.S. Fish & Wildlife Service (USFWS) ever been fully addressed by the Navy. These key documents include the April 2003 *Draft Environmental Baseline Survey Report* (EBS) and the April 2003 *Final Draft Preliminary Range Assessment Report* (PRA). On July 3 and June 21, 2003, respectively EPA had previously commented on the *Draft Environmental Baseline Survey Report* (EBS) and the *Draft Preliminary Range Assessment Report* (PRA). To date EPA has never received a response to our comments on the EBS and PRA; nor has EPA received revised editions of either document. EPA may not be able to complete its evaluations of the Phase I RFI and Groundwater Baseline reports until the Navy fully responds to our comments on the April 2003 EBS and PRA reports, as both are key documents in evaluating the Phase I RFI and Groundwater Baseline reports.

Also, in the "Executive Summary" and Section 14.3 (Summary of Recommendations for the PI and PAOC sites [as well as for the SWMUs and AOCs]) of the RFI Report it is stated that: a) SWMU 1 is recommended for a Full RFI to further characterize the landfill, and b) that eight PI and PAOC sites are recommended for a Phase I RFI and that a work plan for that sampling will be developed at a future, unspecified date. Please be advised that pursuant to Section VI, paragraph B.6 of the January 2000 RCRA Order, the Full RFI work plan is due 90 days from EPA's written notification that such is required. This letter shall constitute that notification for SWMU #1. In addition, pursuant to Section XI, paragraph 2 of the January 2000 RCRA Order,



EPA hereby requests the Navy to submit, within 90 days from its receipt of this letter, draft work plans for the eight PI and PAOC sites recommended for Phase I RFIs.

Also, Pursuant to Section XI, paragraph 1 of the January 2000 RCRA Order, within 75 days of your receipt of this letter, please submit a revised Phase I RFI Report and a revised Groundwater Baseline Report to address the above and all of the enclosed comments.

Please telephone Mr. Tim Gordon of my staff at (212) 637- 4167 if you have questions.

Sincerely,



Adolph Everett, P.E.  
Chief, RCRA Programs Branch

Enclosures (see attached list)

cc: Mr. Esteban Mujica Cotto, Director Puerto Rico Environmental Quality Board (PREQB), w/o encl.  
Ms. Yarissa Martinez, PREQB, with encl.  
Dr. Juan Fernandez, Office of Special Commissioner for Vieques and Culebra, with encl.  
Mr. Felix Lopez, U.S. Dept. of the Interior, Fish & Wildlife Service, with encl.  
Mr. Paul Rakowski, Naval Facilities Engineering Command, w/o encl.  
Mr. John Tomik, CH2M Hill, with encl.  
Ms. Erica Downs, TechLaw Inc., w/o encl.

### **Listing of Enclosed Comment Documents**

1. EPA Region 2, RCRA Programs Branch, Technical Review of the Draft Phase I RCRA Facility Investigation (RFI) Report, dated August 11, 2004, prepared by TechLaw, Inc.
2. EPA Region 2, RCRA Programs Branch, Technical Review of the Draft Groundwater Baseline Investigation at U.S. Navy's Eastern Maneuver Area Report, dated August 11, 2004, prepared by TechLaw, Inc.
3. EPA Region 2's CERCLA Comments on Draft Phase I RCRA Facility Investigation (RFI) Report.
4. EPA Region 2's CERCLA Comments on Draft Groundwater Baseline Investigation at U.S. Navy's Eastern Maneuver Area Report.
5. Puerto Rico Environmental Quality Board's Comments on the Draft Phase I RCRA Facility Investigation (RFI) Report, submitted July 20, 2004 by Julio Rodriguez Colon, Director Land Pollution Regulation Program.
6. Puerto Rico Environmental Quality Board's QA/QC Comments on the Draft Phase I RCRA Facility Investigation (RFI) Report, submitted August 9, 2004 by Julio Rodriguez Colon, Director Land Pollution Regulation Program.



**TECHNICAL REVIEW OF THE  
DRAFT PHASE I RCRA FACILITY INVESTIGATION REPORT  
FORMER ATLANTIC FLEET WEAPONS TRAINING FACILITY  
VIEQUES ISLAND, PUERTO RICO  
DATED JUNE 2004**

**Submitted to:**

**U.S. Environmental Protection Agency  
Region 2  
290 Broadway  
New York, NY 10007-1866**

**Submitted by:**

**TechLaw, Inc.  
139 Fulton Street, Suite 314  
New York, NY 10038**

<b>EPA Work Assignment No.</b>	<b>: R02803</b>
<b>Contract No.</b>	<b>: 69-W-02-038</b>
<b>TechLaw WAM</b>	<b>: Erica Downs</b>
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<b>EPA WAM</b>	<b>: Timothy Gordon</b>
<b>Telephone No.</b>	<b>: 212-832-7573</b>

**August 11, 2004**

**TECHNICAL REVIEW OF THE  
DRAFT PHASE I RCRA FACILITY INVESTIGATION REPORT  
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**TABLE OF CONTENTS**

	<u>Page</u>
GENERAL COMMENTS .....	1
SPECIFIC COMMENTS .....	5
ERRATA .....	12

**TECHNICAL REVIEW OF THE  
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**GENERAL COMMENTS**

1. In each Conclusions and Recommendations section it is stated that a work plan for a proposed background investigation of the soils and groundwater has been submitted to the EPA. The data from the background investigations will be compared to chemical concentrations detected at each area of concern to assess whether the constituent concentrations exceeding the screening levels are either site-related or can be attributed to background conditions. When comparing these background concentrations to the chemical constituents EPA's Risk Assessment Guidance for Superfund notes it is important that "...background concentrations may present a significant risk, and, while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the text to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
2. EPA's Risk Assessment Guidance for Superfund notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern for a quantitative risk assessment. Bearing this in mind, all chemical contaminants should be re-examined and contaminants with unknown concentrations should be considered a potential concern. Revise the Conclusions and Recommendations subsections in each section to be in accordance with this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-20, USEPA Office of Emergency and Remedial Response, December 1989.]
3. Pesticides were detected in excess of screening levels at several locations, including SWMUs 1, 4, 6/7, and 10, AOC G, several PIs and PAOC U. Many of these sections state that the chemicals detected in soils above screening levels have also been detected in the background soils. However, note that EPA's Risk Assessment Guidance for Superfund states,

In general, comparison with naturally occurring levels is applicable only to inorganic chemicals, because the majority of organic chemicals found at Superfund sites are not naturally occurring (even though they may be ubiquitous). The presence of organic chemicals in background samples collected during a site investigation actually may indicate that the sample was collected in an area influenced by site contamination and therefore does not qualify as a true background sample. Such samples should instead be included with other site samples in the risk assessment. Unless



a very strong case can be made for the natural occurrence of an organic chemical, do not eliminate it from the quantitative risk assessment for this reason.

Pesticides are not naturally occurring chemicals. This should be taken into account when conducting any future risk assessment studies. Revise the text to include acknowledgment that pesticides and other organic chemicals, while perhaps detected in background soils, are not naturally occurring, and that EPA risk assessment guidance will be followed. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]

4. As stated in Section 14.2: Data Assessment of PI and PAOC Sites, several of the PI and PAOC sites listed in Table 14-1 have been identified as Munitions Response Sites (MRSs), and these sites will be further evaluated under the Munitions Response Program (MRP). Please note that there are various environmental issues and requirements associated with munitions and explosives of concern (MEC) [e.g., pre-blown-in-place (BIP) and post-BIP sampling, remediation]. EPA should be kept informed of any activities involving MEC cleanup and presented with any sampling results.
5. Most of the PAOC sites are lacking in significant detail and the figures are too small to provide useful information. Provide additional detail and smaller scale figures for each PAOC site with each sample location clearly indicated in relation to significant structures or other features at the site (e.g., stained areas).
6. Appendix H: Analytical Data Summary includes what appears to be summary data. In addition to the summary tables, provide copies of the original analytical data reports provided by the laboratory. These documents should be provided for review purposes.
7. Section 2.2, Task DM – Data Management of the June 2003 Master Work Plan states that in order to detect contaminants with low screening level criteria, special analytical methods would be required. The Master Work Plan also indicates that “full documentation of these analytical methods will be provided with the sample analyses.” However, no method documentation has been provided in the draft Phase I RFI. Include this documentation in the report.
8. The Analytical Data Detection Summary tables for the various SWMUs and AOCs indicate a result of ND (not detected) for cyanide, sulfide, and dioxins for many samples which were not analyzed for these parameters. Revise the tables by replacing ND with NA (not analyzed) for the samples which were not analyzed. Add the abbreviation to the footnotes of each table. Revisions of the tables should include the following:
  - **Table 3-4:** Replace ND with NA in the cyanide, sulfide, and dioxin rows for all samples except CGW1SS08, 17, 33, 35, and 48.

- **Table 3-5:** Replace ND with NA in the cyanide and sulfide rows for samples CGW1MW01, and 05.
  - **Table 4-1:** Replace ND with NA in the cyanide, sulfide, and dioxin rows for all samples except CGW2SS03, 07, 09, and 12.
  - **Table 6-1:** Replace ND with NA in the dioxin rows for all samples except CGW5SS01.
  - **Table 8-1:** Replace ND with NA in the sulfide and dioxin rows for all samples except CGW8SS02.
  - **Table 9-5:** Replace ND with NA in the cyanide, sulfide, and dioxin rows for all samples except CGW10SS06, 07, 10, 11, 13, 15, and 19.
  - **Table 9-7:** Replace ND with NA in the sulfide and dioxin rows for all samples except subsurface sample numbers CGW10SB06, 11, 13, and 19 (reported as samples CGWWTPSB06, 11, 13 and 19 in Table 9-7, refer to Specific Comment 18).
  - **Table 9-8:** Replace ND with NA in the cyanide row for all samples except CGW10MW04 and 05.
  - **Table 10-1:** Replace ND with NA in the dioxin row for all samples except CGW12SS05.
  - **Table 13-1:** Replace ND with NA in the cyanide, sulfide, and dioxin rows for all samples except CGAGSS04.
9. Section 2.15, Data Screening Procedure, states that surface soil sample analytical results were compared to the "EPA (2002) Region 9 residential risk-based concentrations preliminary remediation goals (PRGs)...." The text goes on to state that "in some instances when soil screening values were not available from these primary sources, three other references were consulted," including the Canadian protocol for deriving environmental soil quality guidelines (SQGs), Dutch Soil Quality Standards, and U.S. Fish and Wildlife Service (USFWS) soil screening values, and that the lowest screening value from these three sources was selected for screening. The various Surface Soil Analytical Data Detection Summary tables in the following sections of the report include the relevant screening concentrations for comparison to the detected contaminant levels. However, the referenced criteria sources in the table footnotes include only the Region 9 PRGs, the Region 9 Soil Screening Level (Migration to Groundwater - DAF 20), and toxicological benchmarks from Efroymsen (1997). It is not clear if the Canadian, Dutch, or USFWS screening values were used for any contaminants, and if so for which ones. Indicate in the text and footnotes if any of these additional sources were used. If the additional sources were not used, remove them from the discussion in Section 2.15.

In addition, for ecological soil screening values that were not available in the above sources, such guidance as the USEPA Region 5 Ecological Soil Screening Levels, or the USEPA Region 9 Toxicity Reference Values for invertebrates, mammals, or birds should be used for



comparison to the soil concentrations. Revise the table to include all additionally available soil screening values, and review the data for exceedences as necessary.

10. The screening criteria for dioxins are given in the various Analytical Data Detection Summary tables as Preliminary Remediation Goals for Residential Soil (PRG-Rs). However, the only dioxin soil screening value provided in the Region 9 PRG Table 2002 Update guidance document (USEPA, October 2002) is for 2,3,7,8-Tetrachlorinated dibenzo-p-dioxin (TCDD). Therefore, it is assumed that Toxic Equivalence Factors (TEFs) were applied to the 2,3,7,8-TCDD PRG-R to derive screening levels for the other dioxin congeners, although this has not been clearly stated in the report, nor has the technical approach for the use of TEFs been adequately documented. Confirm in the text that this was the derivation method used, and revise the document to provide both a technical basis and presentation of the approach used for applying TEFs in the Phase I RFI.

In addition, modified soil concentrations for all 2,3,7,8-TCDD congeners (based on TEFs) should be summed to obtain total congener soil concentrations (the total Toxic Equivalence, or TEQ) at each sample location (i.e., add 2,3,7,8-TCDD; 1,2,3,7,8-PECDD; 1,2,3,4,7,8-HxCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 1,2,3,4,6,7,8-HPCDD; and OCDD) in order to provide an estimation of potential cumulative effects for different congener groups. The total values should then be compared to the screening benchmarks for the base value of 2,3,7,8-TCDD ( $3.9\text{E-}6$  in the case of Region 9 Residential PRGs for Human Health), as well as comparing individual congener concentrations to screening values. Revise the document to incorporate this information.

11. The Data Detection Summary Tables include a screening benchmark column labeled "PRG-R." However, the footnote on many of the summary tables includes a definition for the acronym "PRGSO" (EPA Region 9 Preliminary Remediation Goals [2002] - Residential Soil [R], based on a Hazard Index of 0.1 for non-carcinogens). If PRG-R is the same as PRGSO, modify the column header or the footnote in each table for consistency. If they are different, provide the relevant definition of PRG-R.



## SPECIFIC COMMENTS

1. **Section 1.2.9.3, Wildlife and Section 1.2.9.4: Federally Listed Species:** These two sections identify wildlife and threatened and endangered plant and animal species on Vieques. The text includes no discussion of the various species' potential exposure pathways, their sensitivities to the chemical contaminants of concern (COCs), or any habitat disturbance or loss that could occur due to the presence of contamination or due to remediation activities. While it is understood that a discussion or analysis of these subjects was not required by the Work Plan, these topics should be evaluated during future risk assessment-related site activities and reports. Any future investigation or remediation plans should discuss potential impacts of these contaminants or activities, and take steps to minimize the impacts.
2. **Section 2, Field Investigation Procedures:** The fifth sentence of the first paragraph states that work was conducted in 2004 "at SWMUs 2, 4, 5, 8, 10, 12, and AOC G." Based on the contents of the report, work was also conducted at SWMU 1. Revise the text to include SWMU 1.
3. **Section 2.6, Surface Soil Sampling:** This section describes the surface soil sampling method, and indicates that an "Encore™" sampling device was used. This device is not discussed in the report text, the June 2003 Master Work Plan, or the June 2003 Final Site Specific Work Plan. Please provide additional detail as to how this device is used, and clarify whether the VOC samples were collected prior to placing the soils in the bowl, or after. All VOC samples should be collected prior to placing the soils in the bowl in order to disturb the soil sample as little as possible.
4. **Section 2.7, Subsurface Soil Sampling:** Clarify the rationale in deciding at what depth to collect the subsurface soil samples (e.g., the sample was collected at the depth corresponding to the highest Flame Ionization Detector reading).
5. **Section 2.7, Subsurface Soil Sampling:** The second paragraph describes the 2004 sampling activities. It is stated here that at SWMU 2, a soil sample was collected from the "2-ft interval directly above the bedrock." Provide the name and location of this sample.
6. **Section 2.7, Subsurface Soil Sampling:** At SWMU 10, the borings were reportedly advanced until a "black plastic liner" was encountered. Provide further description of the liner (i.e., its use, thickness, condition, etc.). Also, provide text to support the rationale behind sampling no deeper than the liner.
7. **Section 3.2.2, 2004 Geophysical Investigation:** The last paragraph of this section indicates that the boundary of the former landfill extends farther south, and possibly farther north, than previously estimated. It is stated here that "Additional investigations will be needed to delineate the northern and southern boundaries of SWMU 1...." Provide additional discussion of how and when this is expected to take place.
8. **Section 3.2.4, 2004 Groundwater Investigation:** This section indicates that the monitoring wells at SWMU 1 were installed in such a way as to allow for the detection of any possible

floating free phase product. The first paragraph of this section states that the five monitoring wells were installed “at a depth of less than 10 ft below the first encountered groundwater using both 10-ft and 15-ft screens....” For clarity, specify that the *bottom* of the well screen was installed at a depth less than 10 feet below the groundwater. Also, specify if “groundwater” refers to the water table, potentiometric surface, or the first encountered groundwater.

9. **Section 3.2.4, 2004 Groundwater Investigation, last paragraph, page 3-5 and Appendix H, Analytical Data Summary, SWMU 1 – GW:** The last paragraph of this section states that *three* samples, including CGW1MW02, 03, and 04, were analyzed for cyanides, sulfide, and dioxins. However, cyanide, sulfide, and dioxin results for only CGW1MW02 and 04 are presented in the summary tables in Appendix H. Revise the summary table to include cyanide, sulfide, and dioxin data for groundwater well MW-03 as well, or revise the text to correctly indicate which wells were analyzed for these constituents. In addition, revise Table 3-5, Groundwater Analytical Data Detection Summary for any detected dioxin concentrations at MW-03, as necessary.
10. **Section 3.2.4, 2004 Groundwater Investigation; Figure 3-4, Geologic Cross Section A-A’; and Figure 3-5, Geologic Cross Section B-B’:** The SWMU 1 wells were reportedly screened across the water table to detect possible floating product. However, based on Figure 3-4: Geologic Cross Section A-A’ and Figure 3-5: Geologic Cross Section B-B’, the “Groundwater Level Elevation” is located above the screens in all five monitoring wells. This line may represent the potentiometric surface, but this is not clear from the figure. Clarify the figure and revise the figure to be consistent with the text, or discuss this apparent discrepancy.
11. **Section 3.2.4, 2004 Groundwater Investigation; Figure 3-4, Geologic Cross Section A-A’; and Figure 3-5, Geologic Cross Section B-B’:** This section states that the saturated zone was encountered above the bedrock in wells MW-1, 4, and 5, and below the bedrock surface in wells MW-2 and MW-3. However, Figure 3-4: Geologic Cross Section A-A’, depicts saturated soils only at wells MW-2 and MW-3, and the “Groundwater Level Elevation” is located above the well screens. Clarify what is meant in the text by the “first encountered groundwater,” versus the “initial saturated thickness of groundwater during drilling” and the “groundwater level elevation,” as shown on the figures. Revise the figures and/or the text for consistency.
12. **Section 3.4, Conclusions and Recommendations:** The recommendations address the issue of the landfill boundary being farther south than expected by stating that “One additional downgradient well should be installed once the southern boundary of the landfill has been identified.” However, as discussed in the text, the northern boundary will require additional delineation as well. Therefore, MW-01 may not represent background conditions at SWMU 1. One additional upgradient well may be required to the north of the landfill, depending on the results of any further delineation studies. Revise the text to account for this contingency.
13. **Section 4.2, Field Investigation Results; Table 4-1, Surface Soil Analytical Data Detection Summary; and Appendix H, Analytical Data Summary, SWMU 2 – Surface Soil:** Section



- 4.2 states that "Surface soil samples CGW2SS03, CGW2SS07, and CGW2SS09 were analyzed for additional parameters such as cyanide, sulfide, and dioxins...." However, data for these parameters are presented in Table 4-1 and in Appendix H for sample CGW2SS12 in addition to the three samples listed. Revise the text to include sample CGW2SS12.
14. **Section 4.2, Field Investigation Results and Figure 4-4, Surface and Subsurface Soil Sample Locations (Fuel Loading Area):** It is stated in the second paragraph that the sample locations were "established based on the locations of existing concrete pads and interpretations of the ERI aerial photography...." However, it is not clear how, in particular, the location of the subsurface sample at the fuel loading area (near the fuel pipe supports) was selected. Provide additional detail regarding the site-selection process for the subsurface samples (e.g., location downgradient from the fuel pipe).
  15. **Section 7.11, SWMU 6:** This section notes that stained surface soils and no release controls were observed during the 1995 RFA. Show the approximate location of the stained soils on a figure and describe the location in the text. Also indicate whether the June 2000 soil sampling program focused on the stained areas. If the stained areas were not sampled, consider conducting sampling in these areas or provide justification for not sampling the stained areas.
  16. **Section 9.2, Field Investigations:** If the clay and plastic liner in the sewage treatment lagoons was at all visible, provide detail regarding the condition of the visible areas (e.g., any cracks or holes). A liner in poor condition could allow contaminants to migrate into the subsurface. If the liner was not visible, revise the text to include this information.
  17. **Section 9.1, Site Description and 9.2.1, 2000 Soils and WWTP Effluent Investigations:** Section 9.1 states that during February 2000 the sewage lagoon system was found to be overgrown and appeared inactive. This system was reportedly abandoned in October 2000, and a new system was built nearby. However, according to Section 9.2.1, a waste water effluent sample was collected in June 2000 during investigation of the old lagoon system. Provide additional information regarding the discharge point and treatment of the sewage throughout 2000, as well as the operational periods of the current, former, and any interim sewage treatment systems.
  18. **Section 9, SWMU 10 – Sewage Treatment Lagoons, Table 9-7, Subsurface Soil Analytical Data Detection Summary:** The sample names shown in Table 9-7 are inconsistent with other areas of the report. Table 2-1 indicates that subsurface soil samples in SWMU 2 are named with the prefix "CGW10SB." Appendix H also lists the 2004 SWMU 10 subsurface samples with the prefix "CGW10SB." However, Table 9-7 uses the prefix CGWWTPSB, which is the naming prefix used in 2000. Revise the sample names in Table 9-7 to be consistent with other sections of the report.
  19. **Section 9, SWMU 10 – Sewage Treatment Lagoons, Table 9-7, Subsurface Soil Analytical Data Detection Summary:** Summary data for sampling locations CGWWTPSB05 (CGW10SB05) through CGWWTPSB10 (CGW10SB10) have not been provided, although



detections are indicated in the Appendix H tables. Revise the summary table to include these data.

20. **Section 9, SWMU 10 – Sewage Treatment Lagoons:** This section does not provide detection summary tables for the raw wastewater discharge sample collected in 2000 (CGWWTPWW001), although the data provided in Appendix H indicates that contaminants were detected. Include a detection summary table that incorporates these data.
21. **Section 13.4, Conclusions and Recommendations:** Provide detail regarding the condition of the floor inside the building (e.g., any cracks or holes). A floor in poor condition could serve as a migration pathway for contaminants into the subsurface.
22. **Section 14.2, Data Assessment of PI and PAOC Sites:** According to this section, samples have been collected at PI 4, PI 5, PI 6, PI 7 (south), PI 8, PI 10, PI 11, PI 21, PI 22, PAOC U, PAOC V, and PAOC X. However, it is unclear when these samples were collected. Revise the text to indicate the dates of sample collection at each PI and PAOC site.
23. **Section 14.2.1, PI Sites:** It has been suggested by records and interviewees that PI 10 is possibly the site of a former sewage-treatment drying lagoon. Only surface soil samples were collected here, and only metals were detected above the screening criteria. However, this site is a good candidate for groundwater and subsurface sampling, particularly if the area is unlined. If present, VOCs would more likely be encountered in subsurface soils and groundwater than in surface soils. Also, if the area has been inactive for a long period, as suggested, heavy rains could have washed away surficial contamination. Consider conducting groundwater and subsurface sampling in this area and revise the text to indicate that this work will be undertaken in future studies. Alternatively, provide further discussion of the rationale behind collecting only surface soil samples.
24. **Section 14.2.1, PI Sites:** In the description of PI 11, it is noted that a diesel generator was observed outside the pump house. Indicate the fuel source for the generator, if known (e.g., stored nearby, trucked from remote location). Clarify whether a sample was collected from near the generator to address potential historic spills.
25. **Section 14.2.1, PI Sites:** The discussion regarding PI 11 states in the fourth paragraph that “A stained area was observed immediately under the outfall of an open pipe projecting from the side of the pump house.” However, it is then stated on Page 14-22 that “No surface staining or stressed vegetation was observed.” Revise the text to correct this apparent discrepancy.
26. **Section 14.2.1, PI Sites:** Clarify why the PI 12 site was inaccessible. Indicate whether the structures discussed are currently present. If the structures are present, this area may require further inspection.
27. **Section 14.2.1, PI Sites:** The description of PI 21 mentions pits containing “discolored liquid (brown, green)” and “pipes protruding from the embankment.” Provide additional information regarding the discolored liquid (e.g., depth, color, odor, sheen, size, etc.) and the

pipes (e.g, diameter, material of construction, purpose, etc.).

28. **Section 14.2.1, PI Sites:** An empty drum, “bulging at both ends and ...close to rupturing,” was reportedly found at PI 22. Provide any additional available information regarding the former contents of this drum. It is also unclear whether one of the three drums found was intact, including contents. Provide any additional information regarding residual materials remaining within any of the drums.
29. **Section 14.2.1, PI Sites:** Soil samples were collected at PI 22. However, it is unclear if these samples were all surface soil samples, or if some were collected at depth. It is also not stated exactly where the samples were collected or how the locations were selected, with the exception of PI22-4. It is not possible to determine from Figure 14-9 where the samples were collected. Revise the text to include the depth of the collected samples, all of the sample locations, and the rationale in selecting these locations.
30. **Section 14.2.2, PAOC Sites:** The sampling rationale for the PAOCs is generally unclear. Provide additional detail regarding how specific locations were selected.
31. **Section 14.2.2, PAOC Sites:** The discussions of PAOCs I, M, N, O, Q, R, T, and V indicate that there are, or were, boilers, power plants, fuel farms, fuel facilities, and heat plants located at these areas. Provide additional detail regarding the types and quantities of fuels used and stored in these areas.
32. **Section 14.2.2, PAOC Sites:** PAOC I was reportedly a mechanic’s shop, and the structure is still present. The text notes that there was no evidence of petroleum during the 2001 visual site inspection (VSI). However, there was likely petroleum or other fuels stored here while the shop was operational. Spills or other releases may typically be associated with mechanic’s shops. Consider sampling in this area, or provide additional justification for why No Further Action is required.
33. **Section 14.2.2, PAOC Sites:** PAOC M was reportedly a fuel facility. The text notes that there was no evidence of petroleum during the VSI. However, based on the unit description there was likely petroleum or other fuels stored here prior to demolition. Spills or other releases are typically associated with fuel storage areas. Consider sampling in this area, or provide additional justification for why No Further Action is required.
34. **Section 14.2.2, PAOC Sites:** A former water treatment facility pump house was located at PAOC P. No evidence of petroleum was observed during the VSI. Provide additional information on the power source for the pump house (e.g., electricity, petroleum) and where any associated fuel was stored.
35. **Section 14.2.2, PAOC Sites:** The text reports that PAOC T was formerly used by a public works grounds contractor for storage. Provide additional information regarding the type of work performed by the contractor, and what was stored in the shed (e.g., power tools,



pesticides).

36. **Section 14.2.2, PAOC Sites:** The discussion of PAOC S mentions a “POL pipeline.” Define POL here and add the definition to the List of Acronyms.
37. **Section 14.2.2, PAOC Sites:** An area of “pooled, discolored water” was reportedly observed at PAOC W. However, No Further Action has been recommended for this PAOC. Provide additional detail regarding the pool of discolored water (e.g., depth, color, odor, sheen, size, source, etc.) and justify a recommendation of No Further Action.
38. **Appendix A, Soil Boring Logs:** Organic vapor screening results are provided for some soil borings, but not for others. Provide PID data for all the soil borings, if available.
39. **Appendix H, Analytical Data Summary:** The analytical data collected from the Navy was compared against the split samples analyzed by the TechLaw-designated laboratories (Pace Analytical and GPL), and the EPA DESA laboratory. Most of the analytical results were comparable (defined as within two times the detection limit when detected by one laboratory but reported as nondetected by another). The table below provides the instances where a compound was detected above the detection limit by one laboratory, but not by another, as well as the few instances where the split sample results were significantly different (indicated by **bold text**). This information should be taken into account when comparing data to background concentrations or standards. Include a discussion in the text of how the split sample results will be taken into account.

Sample Name (Navy/Split)	Compound	Navy	Pace / GPL	EPA DESA
CGW1SS33-R01 / CGW15533-R01	Perchlorate	100 U µg/kg	140 J µg/kg	NA
CGW1SS35-R01 / CGW15535-R01	Perchlorate	104 U µg/kg	140 J µg/kg	NA
<b>CGW2SS07-R01 / CGW2SS07-R01</b>	<b>2-Hexanone</b>	<b>12 U µg/kg</b>	<b>23 J µg/kg</b>	<b>NA</b>
CGW5SS01-R01 / CGW5SS01-R01	1,2,3,7,8-PECDD	1 U pg/g	1.658 ng/kg	NA
CGW8SS02-R01 / CGW8SS02-R01	2,3,7,8-TCDD	1 U pg/g	1.539 ng/kg	NA
CGW10SS06-R01 / CGW10SS06-R01	Cyanide	0.16 U mg/kg	NA	018 mg/kg
CGW10SS07-R01 / CGW10SS07-R01	<b>2,4-Dinitrotoluene</b>	<b>140 U µg/kg</b>	<b>630 µg/kg</b>	<b>NA</b>
	<b>2,6-Dinitrotoluene</b>	<b>140 U µg/kg</b>	<b>260 µg/kg</b>	<b>NA</b>

NA = Not analyzed



40. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 3, Calibration, last paragraph:* In the last sentence, change the word “calibration” to the phrase “second column confirmation”.
41. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 6, Field Duplicate Sample Results, third paragraph:* In the third sentence, change “seven soil borings, one surface soil” to “seven surface soils, one soil boring”. (See Exhibit 8.)
42. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 7, Laboratory Method Accuracy, second paragraph:* The fifth sentence states that the validator rejected those (semivolatile) analytes that were not spiked into the LCS. However, Method 8270C *requires* that the LCS contain *only* those eleven analytes present in the matrix spike solution. Those analytes should not have been rejected unless:
1. There was a project-specific requirement that the laboratory should include all 8270C analytes in the LCS solution, or
  2. The EPA Region II Checklist, which was used as the guidance document for the data validation by CH2M Hill, requires rejection of analytes which are not spiked into the LCS for Method 8270C.

Revise the text to provide justification for rejection of these results. Also revise the text to include justification for rejection of the other analytes, as this has not been provided in the text.

43. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 8, PARCCs-Completeness:* In the second sentence, change “1588/39833” to “38245/39833”. Completeness is the number of non-rejects divided by the total number of data points. The percent completeness (96%) is still correct. However, the percent completeness would increase to 98% if non-spiked analytes in the LCS were not rejected.

## ERRATA

1. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 3, Calibration, last paragraph:* In the fourth sentence, change the word “to” to “two”.
2. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 5, Potential Field Sampling and Laboratory Contamination, second paragraph on page:* Change “DDT” to “DDD” in both sentences. (See Exhibit 5, Page 2 and Exhibit 4, Page 1.)
3. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 6, Matrix Spike/Matrix Spike Duplicate Precision and Accuracy, third paragraph:* In the last sentence, change the word “date” to “data”.
4. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Page 7, Dissolved vs. Total Metals, first paragraph:* Please rewrite the last two sentences of this paragraph. Although the dissolved mercury result was a detected result, and the total mercury result was a non-detect, the two mercury results (total and dissolved) were less than the reporting limit of 0.2 µg/L. (See Exhibit 10.)
5. *Appendix I, Vieques Former AFWTF Phase I RCRA RFI Data Quality Evaluation (DQE), Exhibit 4 – Data Qualification Changed by Validations:* The first three rows on the first page are repeated as the first three rows on all the remaining pages. For clarity, please correct this formatting error.



**TECHNICAL REVIEW OF THE  
DRAFT GROUNDWATER BASELINE INVESTIGATION  
AT US NAVY'S EASTERN MANEUVER AREA REPORT  
FORMER ATLANTIC FLEET WEAPONS TRAINING FACILITY  
VIEQUES ISLAND, PUERTO RICO  
DATED JUNE 2004**

**Submitted to:**

**Mr. Timothy Gordon  
U.S. Environmental Protection Agency  
Region 2  
290 Broadway  
New York, NY 10007-1866**

**Submitted by:**

**TechLaw, Inc.  
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<b>EPA Work Assignment No.</b>	<b>: R02803</b>
<b>Contract No.</b>	<b>: 69-W-02-038</b>
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**August 11, 2004**

**TECHNICAL REVIEW OF THE  
DRAFT GROUNDWATER BASELINE INVESTIGATION  
AT US NAVY'S EASTERN MANEUVER AREA REPORT  
VIEQUES ISLAND, PUERTO RICO  
DATED JUNE 2004**

**TABLE OF CONTENTS**

	<b><u>Page</u></b>
GENERAL COMMENTS .....	1
SPECIFIC COMMENTS .....	2
ERRATA .....	3



**TECHNICAL REVIEW OF THE  
DRAFT GROUNDWATER BASELINE INVESTIGATION  
AT US NAVY'S EASTERN MANEUVER AREA REPORT  
VIEQUES ISLAND, PUERTO RICO  
DATED JUNE 2004**

**GENERAL COMMENTS**

1. The second objective of the Consent Order was to "investigate the groundwater flow patterns along the western perimeter" of the Eastern Maneuver Area. According to Section 2.2.3.2: 2004 Groundwater Baseline Investigation Sampling, the depth to groundwater was measured, as specified in the September 2001 Final Work Plan for Groundwater Baseline Investigation, Section 2.2.1. However, the only groundwater level data presented as a groundwater contour map (Figure 3-4) in the Groundwater Baseline Investigation report is from the "Round 1" sampling event in 1999. Any additional groundwater level data collected during "Round 2" should be presented in tables and figures, analyzed, and discussed in this report, as this will aid in achieving the stated Consent Order objective.

During future field activities, it will be important to collect additional groundwater data, particularly for the unconsolidated overburden. Considering that the 1999 data, according to Section 3.2: Assessment of Groundwater Flow Conditions, differed from the 1989 Torres-Gonzalez data, additional data will be needed if flow direction is to be accurately assessed.

2. Appendix G of the report includes what appears to be summary data of the RCRA well sampling results. In addition to the summary tables, provide copies of the original analytical data reports provided by the laboratory. These documents should be provided for review purposes.

## SPECIFIC COMMENTS

1. **Figure 1-3, Monitoring Well and Piezometer Locations:** The depth to groundwater at each well is provided in this figure, but it is unclear when this information was collected. Provide clarification on the figure or in the text as to when the depth to groundwater was determined. Provide a legend on the figure to indicate the topographic contour interval, and what the circumscribed numbers represent.
2. **Section 2.1, Sample Locations:** Section 2.1 describes the field activities that took place at the AFWTF during the 1999 Hydrogeologic Investigation and it indicates that monitoring wells were installed at 11 locations. The September 2001 Groundwater Baseline Work Plan, Section 1.1.2: Previous Investigations, indicates that these 11 wells were sampled for explosives and metals. The data from these 11 wells is not presented or discussed in the text of the Draft Groundwater Baseline Investigation. The data and discussion would be useful in the Draft Groundwater Baseline Investigation for providing a broader picture of groundwater quality in the study area. Please revise the Draft Groundwater Baseline Investigation to include the sampling data from the 1999 Hydrogeologic Investigation, and any other appropriate sampling events, and a discussion of the results.
3. **Section 2.2.3.2, 2004 Groundwater Baseline investigation Sampling:** The September 2001 Final Work Plan for Groundwater Baseline Investigation indicates that groundwater sampling will be conducted following EPA's "Low-Flow" guidance. Section V of the guidance states that drawdown during pumping should be kept to 0.3 feet or less. However, according to the groundwater sampling data sheet in Appendix D of the report, drawdown occurred which was significantly greater than 0.3 feet during sampling. Provide a discussion of the reason for deviation from the low-flow sampling procedures and how this may have affected sampling results.
4. **Section 3, Summary of Investigation Results, Table 3-1, Groundwater Analytical Data Detection Summary and Appendix G, Analytical Data Summary:** Appendix G indicates that cyanide was detected in sample RCRA-2-GW. However, these results are not included in Table 3-1. Revise Table 3-1 and the report text to include this information.
5. **Figure 3-4, Groundwater Contour Map:** The area of blue and red lines and text shown on this figure, located south of the Camp Garcia area, is illegible due to the small size. Please provide a detail of this area either on Figure 3-4 or as a separate figure. Also provide a description in the legend of the areas outlined in green shown on this figure.
6. **Section 4, Summary and Conclusions:** This section states that the bedrock groundwater flow is "not likely to flow from the former Navy property to the west," and that VOC contamination reported in the laboratory results is likely due to laboratory cross-contamination. However, these contaminants were also detected in the split samples



analyzed by EPA. Therefore, these contaminants may actually be present in groundwater. This should be confirmed, as stated in the text.

7. **Section 4, Summary and Conclusions:** The last sentence of the fourth paragraph indicates that the conclusions drawn here will be verified in future investigations. Provide additional detail (i.e., what, when, where) and discussion of the future work that is expected to take place.
8. **Appendix A, Test Boring and Well Construction Records:** The Test Boring and Well Construction Records are provided for some wells at the AFWTF site, but not all of the wells. Some test boring and well construction data have not been provided due to an "insufficient data set" (e.g., RCRA-2, NW-1, NW-6, P-1, P-6, P-7). Provide an explanation in the text as to why there were sufficient data for some wells but not others.
9. **Appendix A, Test Boring and Well Construction Records:** The Test Boring and Well Construction Records do not include information regarding the depth at which groundwater was first encountered at certain wells (e.g., RCRA-1, NW-4, NW-7, P-2, P-3, P-5). Revise the Test Boring and Well Construction Records to include this information if it is available.
10. **Appendix E, Data Quality Evaluation, Page 5, Laboratory Method Accuracy:** The fourth sentence indicates that 14 records were rejected. However, the paragraph goes on to describe a total of 16 rejected data points. The last sentence of this paragraph indicates that "5.4% (14/260)" of the total sample measurements were rejected. However, this percentage is based on 14 rejected sample results, instead of 16 rejected sample results. Correct the reference to indicate 16 rejected data points and change "5.4% (14/260)" to "6.2% (16/260)" to accurately reflect the total number of rejected samples.
11. **Appendix E, Data Quality Evaluation, Page 6, Completeness:** Completeness is the percentage of valid measurements out of the total number of measurements made. In the second sentence, change "(34/1067)" to "(1031/1067)". The percent completeness (97%) is still correct.

## ERRATA

1. **Appendix E, Data Quality Evaluation, Exhibit 5 – Change in Data Qualification by Validation:** The first three rows on Page 1 of 6 are repeated as the first three rows on all the remaining pages. Please correct this formatting error.

**CERCLA Comments  
Atlantic Fleet Weapons Training Facility  
Draft RFI Phase I Report  
Vieques, Puerto Rico**

General Comments:

1. Many of the subsites are recommended for No Further Action (NFA) even though no analytical data exist for these subsites. Subsites in this category include PI 5, PI 12, PI 20, PI 23, PAOC I (identified as the location of a "former power plant and mechanics shop"), PAOC M (identified as the location of a fuel facility), PAOC O (identified as the location of a boiler room in a heat plant building), PAOC P, PAOC Q, PAOC R, PAOC T, and PAOC W. It is difficult to agree with the recommendation for NFA with no empirical data for the site. It is recommended that confirmatory surface and subsurface soil samples be collected from these areas to reinforce the anecdotal information that no activities occurred in these areas and that no contamination exists.
2. Many of the subsites are recommended for NFA based on very limited site data, typically surface soil samples from 0 - 6 inches. It is inappropriate to assume that a subsite is fully characterized based on this limited data set. Subsites in this category include PAOC V (identified as the location of a "storage area of a leaking transformer"). It is recommended that additional surface and subsurface soil samples be collected from these areas to more clearly show that there is no contamination and that these sites are appropriate for NFA.
3. Many of the subsites are recommended for evaluation under the Munitions Response Program. A more complete description of this evaluation is necessary before this recommendation can be fully considered. For example, is there a chemical or environmental assessment for the MRP program? In addition to any assessment for munitions, a chemical or environmental assessment should be performed at each of these subsites so that appropriate action may be taken.
4. Many of the subsites are recommended for a comparison to background data. This approach is inconsistent with CERCLA guidance and is also inconsistent with the approach used on subsites in the NASD area. Media-specific contaminant concentrations that exceed risk-based screening values should be evaluated quantitatively in a risk assessment. Then, a comparison to background values may be performed, and the results of this assessment would be discussed in a risk management decision. Also, please note that current EPA guidance recommends that any comparison to background is done on using appropriate statistical tests to compare data from onsite sampling with data from background sampling. Therefore, a statistically appropriate number of samples should be



collected so that the statistical comparison to background can be performed.

5. The depth of the surface soils is inconsistently presented throughout the text and the tables. For example, Section 2.6 notes that surface soil samples were collected from the surface to 8 inches below land surface. Section 3.2.3 notes that surface soil samples at SWMU 1 – Camp Garcia were collected from a depth of 0-6 inches. Section 8.2 notes that surface soils samples at SWMU 8 – Waste Oil Accumulation Area, were collected from a depth of 0-5 inches (while the tables indicate that surface soils were collected from the top 6 inches). Please verify the depths of all soils samples, clarify any deviations from the work plan, and revise text and tables accordingly.
6. Typically, for ecological risk assessment purposes, soil samples are collected from the top 12 inches and sediment samples are collected from the top six inches. However, as noted in the "Resolution of Technical Disagreements From Concerns Raised on The Discussion of Area of Concern (AOC) I and AOC R (Former Naval Ammunition Support Detachment)", depending upon the receptors of concern, soil sample collection from 0-24" may be recommended for ecological purposes. The rationale for the varying depths of surface soil sample collection should be presented. Further, the rationale for collecting subsurface samples from a depth of 2-4 feet, 3-5 feet or 4-6 feet should also be included on a site by site basis.
7. Region 9 Preliminary Remediation Goals should be screened at a hazard quotient of 0.1 or an excess lifetime cancer risk of  $1 \times 10^{-6}$ . Please revise the text throughout the document to include the cancer endpoint.
8. Any risk-based screening at this stage of an investigation should use risk-based concentrations for hexavalent chromium and methylmercury. These two forms are likely to result in the most health-protective screening process. Once the subsites are being assessed using more site-specific data, then the respective forms of these two metals may be discussed more in detail.
9. Subsurface soils were not compared to any direct contact criteria, only to leachability criteria. What is the rationale for this, since certain populations such as utility or construction workers, would be reasonably anticipated to have exposure to this medium?
10. Appendix IX metals were analyzed in the various media. However, this list does not include several metals that are included in the Target Analyte List typically used by CERCLA. It is recommended that all additional samples for metals utilize the TAL list.
11. The need to collect surface water or sediment samples at or down gradient of the sites evaluated in this report should be considered on a site by site basis. The background sampling investigation should also include sampling of appropriate surface water and sediment locations. EPA is available to assist in the locations of these samples. This

information should be included in any ecological risk assessments conducted for these sites.

12. It is mentioned that work plans for future work recommended by this RFI were sent to EPA for review. Please indicate when they were sent and when comments are expected from EPA.

Specific Comments:

13. Executive Summary, RFI Objectives, page III: The first objective listed is to determine whether or not releases of hazardous constituents have occurred from each SWMU and AOC identified in the Consent Order by sampling appropriate environmental media (soil, groundwater, surface water or sediment) and by comparing the analytical results to screening criteria protective of human health and environment. However, the data presented in the report only include those for soil and groundwater. No surface water or sediment samples appear to have been collected even though many of the sites are located along drainage areas or in close proximity to the northern or southern coastline. Justification should be given for this inconsistency. In the event that these data are available, they should be included in this report.
14. Executive Summary, Investigation Approach, page III: The field investigation included sampling and analysis of 128 surface soil, 41 subsurface soil and 10 groundwater samples. The report contains a separate section for each of the sites investigated. These sections include a description of the site, a summary of the sampling conducted and the results of the chemical analyses for the soil and/or groundwater data. No rationale is given as to why some of the sites had just surface soil samples collected, some had both surface and subsurface soil samples collected and some include surface, subsurface soil and groundwater samples. A rationale for sample collection should be presented in this document.
15. Executive Summary, Sites Recommended to be Compared to Background Data, page V: The process outlined for comparison to background includes a risk assessment when concentrations exceed background. As the Navy is well aware, this is the opposite order from that suggested by EPA guidance and for all other work done to date on Vieques. That is, risk assessment is done when screening levels are exceeded, then a comparison to background is made for those constituents that pose a risk. This work should follow the established procedures that are already in use, not adopt a new, contradictory approach.
16. Executive Summary, Sites Recommended for the MRP and to be Inspected for Potential MEC, page VI: For sites in these two, last categories, it seems that a further step will be needed. Those sites where MEC is found should be evaluated for MEC related contamination, once the sites have been cleared of potential explosive hazards. Also, it



should be made clear why only a surface survey is needed for the last category of sites. Barring some explanation as to why it is not needed, it would seem that using geophysics to look for MEC would be more appropriate than simply a visual inspection of the surface.

17. Executive Summary, Table ES-1: As presented, the data indicate that metals were not analyzed in subsurface soils at any subsite. Is this correct? If so, then additional samples should be collected at all subsites for metals.
18. Section 1.2.5, Topography and Surface Water, page 1-7: The report notes that the coastal areas of Vieques contain level terrain primarily made up of lagoons and mangrove swamps. It is further noted that the surface runoff from the 12 sites addressed in the report generally flows south to the Caribbean Sea. Many of the sites are located along drainage areas or in close proximity to the shoreline. However, the site-specific sections do not include any discussion regarding surface runoff from the sites or the need for sampling down gradient of a site in the lagoons or mangrove swamp areas where it is expected contaminants would settle out. In order to better delineate the potential extent of contamination, down gradient sediment and surface water samples should have been collected. As noted above, the rationale for sample selection should be presented.
19. Section 1.2.7, Soils, page 1-8: A listing is provided of which sites are underlain by various rock types. Other investigations have indicated that the base map used for these determinations can be incorrect in detail. Site specific data, where it has been collected, needs to be used to ground truth the reference map.
20. Section 1.2.9.3, Wildlife, page 1-10: Though Table 1-1 presents a listing of Federally listed plants and animals on and around Vieques Island, including marine species, the section on wildlife does not include any discussion of aquatic receptors (i.e. that would be expected to found in the lagoons and mangrove swamps [coast] or ephemeral streams). The southern coastline directly south of Camp Garcia, is part of the South Coast Bays Conservation Zone, and is home to two of the world's seven surviving bioluminescent bays and some of the most diverse coral reefs found in the U.S. Caribbean territorial waters. The possibility that these habitats could be impacted from surface runoff from the sites considered in this report should be considered.
21. Section 2.6, Surface Soil Sampling, page 2-3: Surface soil samples were collected from 0-8 inches, while the work plan indicated they would be from 0-6 inches. Please justify this change. In addition, the text states that the top 1 inch was removed prior to sampling. So, in fact the sampling was from 1-9 inches.
22. Section 2.11, Laboratory Field Sampling Protocol, page 2-6: EPA Region 2 does not use Levels to describe the quality of the data. Please remove this reference.

23. Section 2.13, Data Validation, page 2-9: The modifications made to the CLP National Functional Guidelines for data validation for this project should be described or referenced here.
24. Section 2-15, Data Screening Procedure, page 2-10: The reasons for using Region 9 screening criteria should be stated in the report.
25. Section 3.2.2, 2004 Geophysical Investigation, page 3-3: The text argues that the east-west limits of fill have been defined by geophysics. However, Figure 3-3 shows that the ends of the east-west transects are only a short distance from anomalies. To be certain that all fill areas have been identified, geophysical lines should be extended to the east and west, as well as the additional delineation to the north and south.
26. Section 3.3.1.2, Pesticides, page 3-6: The text states that various contaminants were either not detected or detected below screening criteria. This phrasing is used in several places in the text. As has been repeatedly stated, this is not an acceptable way to discuss the data as it leaves the reader to go through all of the raw data to determine what compounds are actually present. Please revise the report to include summaries of all detected anthropogenic compounds. Clearly indicate what has been found at the site and what compounds were not detected.
27. For groundwater data, include a table of the final readings of field parameters prior to sampling. When presenting dissolved and total concentrations, present and discuss turbidity in the sampled water and any differences in the data sets.
28. No subsurface samples were collected at SWMU-1. It is not possible to adequately characterize the area based on surface soil samples alone. As it has been over 25 years since this was an active disposal area, it is very unlikely that the top 6 inches of soil would adequately represent the area in which contaminants might be distributed. Table ES-2 indicates that the site is recommended for a full investigation, at which time subsurface samples and representative sampling of known waste areas will need to be collected. The Conclusions and Recommendations in Section 3.4 should include mention that the site is recommended for a full investigation.
29. There are a number of issues which arise in the study of many of the sites. Instead of repeating them this issues are listed here: a) Subsurface samples were usually not collected. As discussed above with regard to SWMU-1, surface soil sampling alone is not sufficient to rule out the possibility of contamination. b) The text needs to discuss the occurrence of all anthropogenic chemicals which were detected at the site and their possible sources. c) The figures are almost always inadequate. They do not show site features or the relationship of sampling locations to these features. Without better figures, it is not possible to evaluate the work or a forward path for a site. For some sites, no figure is even included.



30. The extent of land filling at SWMU-1 has been investigated using aerial photographs up until 1964. However, the text states that the land filling was active until 1978. If there are images from 1964 to 1980 available, these should also be reviewed.
31. As has been stated in other reviews for work on Vieques, all detections of anthropogenic compounds should be included on tables and figures. Furthermore, the text needs to discuss these occurrences, their distribution and likely scenarios as to the source of the contamination.
32. Table 3-4: On Page 1 of this table, please remove the "ND" from the SVOC row for samples CGW-1SS09, -1SS10, -1SS11, and -1SS12. Also, page 3 of this table is missing.
33. Table 3-5: The following metals are not included on this table: Arsenic (total and dissolved), Lead (total and dissolved), Tin (total), Beryllium (dissolved), and Cadmium (dissolved). Why are these metals not included in the table?
34. Figure 3-6: The work plan included two monitoring wells to the south of the area and two wells within the area. Instead, all four of these wells were installed along the southern margin. The result is a much poorer understanding of flow, stratigraphy and possible contaminant distribution. No reason or explanation for this significant change is offered. These missing wells should be installed and sampled.
35. Figures 3-7 and 3-8: The purpose of figures such as these are to view contaminant concentrations spatially. The data here has been split to be represented on two figures, based on the sample ID number. This was presumably in order to fit the data on the page, but results in a poor presentation. Make a bigger figure or blow up portions of the map and include samples by area, not by sample ID. Alternatively, it is very common to have separate figures for contaminant classes, such as showing only the pesticide results. If data can be contoured, that should also be done to illustrate distribution trends. If contouring is not possible, then that can be included in the discussion as evidence that the concentrations are fairly uniform. It is important to actually discuss the distribution of contaminants in the text.
36. SWMU-2: a) The two subsurface soil samples are not adequate to characterize the site. Additional samples are needed right in the area where the tanks were located. b) It is not clear why the location for SB-01 or SB-02 were selected. Please give better figures and explanation as to what is located in these areas. Locations should be targeted to the most likely areas for release. c) Borings in the area of the ASTs should be screened using a PID and visual inspection to the depth of the water table to determine if NAPLs may be present. d) The conclusions section references ground water samples; they were not collected at this site. Please correct. e) Any information on where the pipeline was



thought to run should be provided. The text does state that it could not be located. Are there any documents which show where it ran or was presumed to run?

37. SWMU-4: a) There was a single subsurface sample collected at this SWMU, while there are at least 3 areas where there are potential releases. Each area should be investigated. As with other sites, the surface soils are not sufficient to determine that no contamination exists. b) The pH of soil needs to be profiled in the vicinity of the acid battery storage area. c) It is not clear if the catch basin was below grade or how oil that collected there was disposed of. Please provide a better description and justify the depth of the nearby subsurface sample in the context of the depth of the basin. d) The conclusions section mentions groundwater sampling - which did not occur at the SWMU. Please correct. e) Please indicate if the sheds have concrete or dirt floors. If the later is the case, samples should be collected from inside the sheds.
38. Table 5-1: Why are the cells for Antimony and Cadmium empty for certain sample locations, such as CGSWMU4SS008?
39. SWMU-5: a) Figure 6-2 does not adequately depict where the batteries were actually stored. b) Soil pH should be profiled right in the area where batteries were stored.
40. SWMU-6/7: a) Figure 7-4 does not adequately depict where the two waste storage areas were. The text seems to indicate that both areas entailed storage on the grass, but the sampling which occurred circled the concrete pad. Please show exactly where each area is and the location from which stained soils are thought to have been removed.
41. SWMU-10: a) Clarification of subsurface soil sampling depths is needed. In the 2000 sampling, it appears that sampling was from depths of 4-5 feet and were collected above the liner. The 2004 samples are all noted as being collected from 4-6 feet, but collected from below the liner. This seems contradictory. Please clarify and provide an understanding of the depth at which the liner was encountered. b) The text states that the lagoons are overgrown. Please clarify if surface soils appeared to be waste material that had collected in the lagoons, or soils which covered the waste material. Also, indicate if the closure of these lagoons included any backfilling. c) Include a table of the wastewater results at the end of the section rather than only stating that contamination was found. d) As flow from the lagoon area appears to be radial, it is not appropriate to call MW-01 a background well. The flow paths indicate that this well would be impacted by any contamination from the lagoons. e) EPA splits from this SWMU contained low level detections of perchlorate and explosives. This needs to be factored into the future efforts.
42. Table 10-1: Please revise the table to include the depth of the samples.
43. AOC A: This section presents the results of the TPH analysis and the BTEX constituents.

As shown in Table 11-1, since the results of the BTEX are such a minor component of the total TPH DRO results, a significant portion of the TPH has not been identified. The text should explain what this means. For example, is it likely that the significant portion of the TPH DRO is high molecular weight straight chain hydrocarbons? If so, the relative toxicity of these component compared to BTEX is significantly lower. This information should be discussed so that appropriate recommendations can be made for future action at this subsite.

44. AOC A: The four samples which exceeded the TPH screening value were those under the excavated piping. This area remains contaminated and has not been sampled for SVOCs, a potential contaminant of concern. This requires additional sampling. The area should also be addressed in a manner consistent with PREQB UST regulations.
45. Table 12-1: There is a footnote that reads, "Mean concentration is based on 1/2 the detection limit for non-detects." What is the purpose of this footnote for this table?
46. Sample depths are often not included for the PI sites. Please go through this section and make sure this is clear for all samples.
47. Page 14-3: In the description of historical activities/uses for PAOC X, the term "quebrada" is used. Based on recent discussions on the use of this term, is this an appropriate use of the word?
48. Page 14-5: Please note that Step 10 is inconsistent with current CERCLA guidance. This approach is inconsistent with CERCLA guidance and is also inconsistent with the approach used on subsites in the NASD area. Media-specific contaminant concentrations that exceed risk-based screening values should be evaluated quantitatively in a risk assessment. Then, a comparison to background values may be performed, and the results of this assessment would be discussed in a risk management decision. Also, please note that current EPA guidance recommends that any comparison to background is done on using appropriate statistical tests to compare data from onsite sampling with data from background sampling. Therefore, a statistically appropriate number of samples should be collected so that the statistical comparison to background can be performed.
49. PI-5: The description of this area is weak and needs to be augmented. Include a figure that shows the area, the locations of debris and drainage features, and the beach matting. Also, indicate and discuss the possible fill area noted from the aerial photo review. Unless it can be clearly shown that there is no area where contamination could be present, the area should be sampled, not moved to NFA.
50. PI-6: a) Figure 4-14 is illegible and scaled so that it is impossible to determine the distribution of the features that are discussed, or their relationship to the sampling locations. Please provide a better figure and label each of the site features. Wipe samples



from the concrete pad which may have had transformers is not an adequate means to investigate the possible presence of PCBs. This should be done via surface and subsurface soil sampling. c) Please indicate the depth of the soil samples. d) The site is recommended for risk assessment and potential NFA, which is not appropriate. PCB sampling should definitely take place. Other sampling may also be suggested once the presentation of the area is improved and it becomes possible to determine the layout of various features.

51. Table 14-2: This table uses the term "PRG-R" to reference the Region 9 PRGs for residential soils. However, in other tables in this document, the term "PRGSO" is used to reference the Region 9 PRGs for residential soils. Please verify if these two terms reference the same values or different values.
52. PI-8: This site needs to be further investigated. Subsurface soil samples should be collected and other samples may also be required. With the poor quality of the figure describing this area it is not possible to assess the locations which were sampled.
53. PI-21: As this site was noted as a possible artillery firing position, please discuss why it does not need to be treated as having possible MEC. Also, the aerial survey noted a vertical tank at this location. This is noted in the work plan but not in the report. Was the nature of the tank determined and what does reconnaissance of the former tank area show? Lastly, further investigation (or description, if available) of the piping needs to be conducted prior to considering NFA.
54. PI-22: The figure does not afford any interpretation of the data as it is not clear where the samples were collected relative to site features. The drums at this site need to be investigated and removed. Sampling of surface and subsurface soils are needed in the area where the drums are located. Other possible sampling requirements should be assessed based on a figure that shows site features such as debris and excavations. The drums alone make it clear that this is not yet a candidate for NFA. Navy records should be searched to try and interpret the meaning of the drum label "DARACEN 19."
55. PI-23: It remains unclear what the pit was. Without further information, it needs to be assumed that there could have been contamination. Viewing the area from a distance and a lack of information is not sufficient to justify NFA.
56. PAOC I: Please indicate what sort of mechanic's shop was located here. Depending what sort of activities were conducted, there is the potential for oils, BTEX or solvents to be present.
57. PAOC M: The texts note that a 'fuel facility' was present at this site. Please give a more detailed description and justify why it should be assumed that a fuel facility does not have the potential to be contaminated. A map of this and other nearby PAOCs is needed.



58. PAOC O, Q, and R: All three of these PAOCs involve boiler rooms. Please discuss fuel for the boilers and where it was stored. If oil tanks or piping were present they could present a concern.
59. PAOC S: What does POL stand for?
60. PAOC V: No information on the sample locations or depths is given here. Assuming that the two samples were surface samples, some vertical profiling is needed to ensure that there has been no significant release. Provide a map with the layout of the area and sample locations so that the need for additional sampling can be assessed.
61. PAOC W: A more detailed description of the area is needed to assess if further action is needed. The text notes discolored water. What color is it and what is presumed to be the cause? Is this thought to be a natural or manmade feature? Is the area around the pool disturbed? The site should not move to NFA unless there is evidence which explains the presence of the discolored pool. A lack of knowledge about the site should prompt further investigation.
62. PAOC X: Provide a map showing site features and sample locations. Provide sample depths. As with other sites, surface samples are not sufficient to move to NFA.
63. Section 14.3.1, Sites to be Transferred to the MRP, page 14-39: The authorities under which these sites are likely to move forward need to be clarified. It is anticipated that the East Side of Vieques will be under the CERCLA program in the near future. In claiming that the sites noted in this section will be dealt with under the MRP, is the implication that CERCLA considerations are not applicable? Many of the sites have had only a cursory reconnaissance for environmental concerns. This needs to be resolved and clearly presented.
64. Section 14.3.2, Sites to be Inspected for Potential MEC, page 14-39: The suggested plan for these sites appears to consist of only a site walkover. If areas were used far enough in the past, this will not be sufficient to screen for MEC. Use of geophysics should be considered in order to give more definitive results.
65. Section 14.3.4, Sites to be Compared to Background Data, page 14-39: Discussing this category is difficult as many of the sites do not have adequate figures (especially for PI and PAOC sites). However, in each case there appears to be a need for additional sampling. As has been noted, sampling of surface soils in areas which have not seen activity for many years is not adequate to rule out the possibility of contamination. Subsurface sampling needs to be conducted. Other sampling may also be needed and should be based on better figures, and, ideally site inspection by technical staff from regulatory agencies. See site specific comments above for additional notes.

66. Section 14.3.5, Sites Recommended for NFA, page 14-40: I concur that the following 4 sites are appropriate for NFA: PI-12, PI-20, PAOC-P, and PAOC-T. For 7 other sites, it may be possible to move to NFA with better site descriptions and more details. This is true for PI-23, PAOC-I, PAOC-M, PAOC-O, PAOC-Q, PAOC-R, and PAOC-W. For the remaining sites included in this section, there seems to be a need for additional sampling in order to be sure that no contamination exists at the site. Details are generally provided above, but often this is the result of either no sampling or a lack of subsurface sampling. These sites are AOC-A, PI-5, and PAOC-V.
67. Section 14.3.6, Sites Recommended for a Full RFI, page 14-40: Elimination of COCs based on existing results does not seem appropriate. This is an area of heterogeneous disposal and no subsurface soil sampling has been conducted. The lack of detections to date is not sufficient to conclude that they could not be present.
68. Appendix I, the first step in performing a DQE should be to review the project's Data Quality Objectives (DQOs) and the sampling design. The DQOs provide the context for understanding the purpose of the data collection effort and establish the qualitative and quantitative criteria for assessing the quality of the data set for the intended use. The sampling design provides important information about how to interpret the data. EPA Guidance (provided by EPA QA/G-9, Guidance for Data Quality Assessment available at <http://www.epa.gov/quality1/qs-docs/g9-final.pdf>), specifies that the quality of the data should be evaluated based upon its intended use. The DQE should describe the process used to accomplish this.
69. Appendix I, the DQE, as described by these Appendices, did not attempt to quantify the decision error attained by the collected data. In order to be able to draw conclusions from the data, it is necessary to quantify the error and determine whether the sampling design accomplished the required confidence level.
70. Appendix I, although this DQE does perform a thorough analysis of the quality of the specific data points it does so without addressing the overall trends presented by the results and its relationship with the project goals. Data QA/QC is only one of the aspects of determining whether the data collection and analysis process for this project attained the project goals. Please refer to the EPA QA/G-9 document cited above for guidance.



**CERCLA Comments**  
**Atlantic Fleet Weapons Training Facility**  
**Groundwater Baseline Investigation at the U.S. Eastern Maneuver Area**  
**Vieques, Puerto Rico**

General Comments:

1. Our understanding of this document is that it was developed in order to determine if four sentinel monitoring wells on the western boundary of the Eastern Maneuver Area have been impacted by site activities. The timing of this document is somewhat confusing, as these four sentinel monitoring wells, RCRA-1, RCRA-2, RCRA-3, and RCRA-4, are also identified in the draft final Work Plan and Sampling and Analysis Plan for Soil and Groundwater Background Investigation (May 19, 2004); this implies that these wells have already been evaluated and found to be unimpacted by site contamination. Please clarify the intent of the two documents and how these four sentinel monitoring wells can be identified for both purposes.
2. When providing groundwater sampling results, a table should always be included that summarizes field parameters in the wells just before sampling. As there were only 4 wells sampled in the present case, the data was reviewed in the appendix. In the future, please include such a table to facilitate review of the data.
3. The first step in performing a DQE should be to review the project's Data Quality Objectives (DQOs) and the sampling design. The DQOs provide the context for understanding the purpose of the data collection effort and establish the qualitative and quantitative criteria for assessing the quality of the data set for the intended use. The sampling design provides important information about how to interpret the data. EPA Guidance (provided by EPA QA/G-9, Guidance for Data Quality Assessment available at <http://www.epa.gov/quality1/qs-docs/g9-final.pdf>), specifies that the quality of the data should be evaluated based upon its intended use. The DQE should describe the process used to accomplish this.
4. The DQE, as described by these Appendices, did not attempt to quantify the decision error attained by the collected data. In order to be able to draw conclusions from the data, it is necessary to quantify the error and determine whether the sampling design accomplished the required confidence level.
5. Although this DQE does perform a thorough analysis of the quality of the specific data points it does so without addressing the overall trends presented by the results and its relationship with the project goals. Data QA/QC is only one of the aspects of determining whether the data collection and analysis process for this project attained the project goals. Please refer to the EPA QA/G-9 document cited above for guidance.

### Specific Comments:

6. Section 1.2, Summary of Previous Investigations, page 1-2: The report indicates that 11 groundwater monitoring wells were installed at the property line such that groundwater samples could be obtained for laboratory analysis and that eight piezometers were used to collect groundwater elevation measurements to assess groundwater flow direction. Further, the report notes that in addition to sampling the 11 wells (including the four RCRA wells) along the western property boundary for explosive-derived compounds, the Navy also sampled the wells for metals. The Groundwater Baseline Investigation Report only includes the data from the four RCRA wells (as noted in the Introduction, page 1-1) and indicates that only water elevation measurements were obtained from the remaining eight monitoring wells. This contradiction needs to be corrected. If there are additional groundwater data available then they should be made available. Of special interest to the BTAG would be any groundwater chemistry data from NW-1 (the monitoring well located in closest proximity to the north coast of the island) and from NW-7/NW-8 (the monitoring wells located in closest proximity to the south end of the island).
7. Section 2, Field Investigation Activities, page 2-1: In the second paragraph on this page, the text states that the monitoring wells were analyzed for the Appendix IX metals. This list is a typical list used by RCRA, and contains the following 17 metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc. CERCLA typically uses the TAL list for metals, which includes the Appendix IX metals plus aluminum, calcium, iron, magnesium, manganese, potassium, and sodium. It is suggested that the list of metals be expanded to include the additional 6 metals that would be included on the TAL list. This will be helpful if this area of Vieques Island is evaluated in the future under CERCLA.
8. Section 3.3.1.2, VOCs, page 3-3: The discussion of VOCs is incomplete. The text simply discounts the few exceedences of risk-based concentrations by stating that their presence "...could be from laboratory cross-contamination." Since laboratory cross-contamination would also likely impact the results of the other three sentinel monitoring wells or analytical blanks, and this was not found to be the case, it is suggested that an additional sample be collected from RCRA-3 to confirm that the detections of bromodichloromethane and chloroform are anomalous.
9. Table 3-1: Some of the cells in this table are blank, such as the RCRA-3 results for dissolved vanadium, and total and dissolved zinc. Please clarify why these cells are blank.
10. Section 4, Summary and Conclusions, page 4-1: The report concludes that generally, groundwater north of well NW-3, located at approximately the north/south midpoint of the island, flows north toward the Atlantic Ocean and groundwater south of NW-3 flows south toward the Caribbean Sea. The report further notes constituents detected above risk-based screening levels are likely attributed to either background conditions or laboratory contamination. The additional groundwater sampling to establish



background levels will allow this conclusion to be further evaluated. The possibility that former Navy activities might have an impact on groundwater quality at the northern or southern boundary of the former EMA and could be discharging contaminants to the Atlantic Ocean or Caribbean Sea should also be evaluated in the event that groundwater near these boundaries is found to contain elevated levels of site-related contaminants.



COMMONWEALTH OF PUERTO RICO  
OFFICE OF THE GOVERNOR  
ENVIRONMENTAL QUALITY BOARD

ENCL. 5

July 20, 2004

Mr. Dale Carpenter, Chief  
Caribbean Section  
RCRA Program Branch  
US Environmental Protection Agency, Region II  
290 Broadway  
New York, New York 10007-1866

**RE: DRAFT PHASE I RCRA FACILITY  
INVESTIGATION REPORT  
FORMER ATLANTIC FLEET WEAPONS  
TRAINING FACILITY (AFWTF)  
VIEQUES ISLAND, PUERTO RICO**

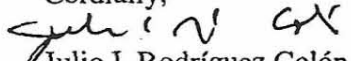
Dear Mr. Carpenter:

The Hazardous Waste Permit Division (HWPB) from the Land Pollution Control Area (LPCA) has finished the review of the above-mentioned document. The revised document has the intention to presents the results of the Phase I RFI completed at the former Atlantic Fleet Weapons Training Facility (AFWTF).

The document review was scheduled as a commitment for the Second Quarter in the 2003-2004 RCRA Grant Work Plan negotiated between the US Environmental Protection Agency Region II and Puerto Rico Environmental Quality Board (PREQB). The commitment was not achieved at that moment due to delays in the investigation process, therefore is been submitted during the current quarter.

Should you have any comments regarding this matter, do not hesitate to contact Mrs. Gloria M. Toro-Agrait, of my staff, at (787) 766-8117 or (787) 767-8181 extension 2853.

Cordially,

  
Julio I. Rodríguez Colón

Director  
Land Pollution Regulation Program

xc. Timothy Gordon, RCRA Caribbean Section  
Yarissa Martínez, PREQB



***Comments on Draft Phase I RCRA Facility Investigation Report Former  
Atlantic Fleet Weapons Training Facility (AFWTF) Vieques Island,  
Puerto Rico***

**Section 2**

1. **Page 2-7 Section 2.11 and 2.12** Discussed the frequency of the Quality Assurance/ Quality Control (QA/QC) samples. The document did not presents the exact number of QA/QC samples collected and/or analyzed during the RFI's Activities.
2. **Page 2-13 Section 2.16** Presents summary and conclusions about field duplicates results and laboratory control samples; no information is included within the document that supports the conclusions.

**Section 3**

3. **Page 3-7 Section 3.4** It is recommended to perform further geophysical studies at SWMU 1 to clearly delineated the boundaries of the SWMU. After the performed Geophysical Investigation, the southern and northern boundaries could not be delineated. The report recommends, "One additional down-gradient well should be installed once the southern boundary of the landfill has been defined". The utility of the up gradient well should be re evaluated once the northern boundary has been defined too. It should be clearly stated at the conclusions and recommendations that the definition of the northern boundary of SWMU 1 will trigger and evaluation of the usefulness of the up-gradient well.
4. **Table 3-4** Presents the surface soil analytical data detection summary for SWMU 1. At the first line the units of the sample depth should be included. Page 3-3 Section 3.2.3 states that the surface soil samples were collected from a depth of 0 to 6 inches on the other hand the table 3-4 presents a depth of 0 to 5 without units. These discrepancies must be clarified. and the Sample Type described and the significance of the letter N should be defined.
5. **Table 3-5** Presents the groundwater analytical data detection summary for SWMU 1. The Sample Type need to be described, the significance of the letter N should be defined.
6. The Final Master Work Plan on Section 2.1.3 specifies, "Institutional controls that preclude intrusive activities will be installed and will negate the need for subsurface soil samples at the site". A description of the implemented institutional controls (if any) implemented on SWMU 1 must be included within the report.

#### Section 4

7. **Page 4-4 Section 4.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 2 have been detected in the background soils and groundwater at the former NASD located in western Vieques." Nevertheless, no groundwater were sampled at SWMU2 and since a work plan for a proposed background investigation of the soils and groundwater at AFWTF has been submitted to EPA and EQB, the above mentioned sentence should be eliminated from the report due that it is not valid for comparison reasons.
8. **Table 4-1** Presents the surface soil analytical data detection summary for SWMU 2. The Sample Type is not described; the significance of the letter N should be defined. No depth is included at the Table 4-1.

#### Section 5

9. **Page 5-4 Section 5.4** During the 2004 sampling event only one sample of subsurface soil at a depth of 4 to 6 feet was collected for SWMU 4. The conclusions and recommendations stated "No analytes were detected at concentrations above the screening criteria in the subsurface soil samples collected from SWMU 4 during the 2004 sampling event". The above-mentioned sentence create the impression that more than one sample was taken for analysis. This should be corrected to reflect the accurate information. See comment number 7.
10. **Page 5-4 Section 5.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 4 have been detected in the background soils and groundwater at the former NASD located in western Vieques." See comment number 7.
11. **Table 5-1** Presents the Surface Soil Analytical Data Detection Summary. The presented depth for the sample is 0 to 0.5 (without units), and Section 5.2.1 indicates that twelve surface soil samples were taken from a depth of 0 to 6 inches. Clarification regarding the depth of the samples should be made. The Sample Type need to be described, the significance of the letter N should be defined.
12. **Table 5-2** Presents the Subsurface Soil Analytical Data Detection Summary. The Sample Type need to be described, the significance of the letter N should be defined.



## Section 6

13. **Page 6-2 Section 6.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 5 have been detected in the background soils and groundwater at the former NASD located in western Vieques." See comment number 7.
14. **Table 6-1** Presents a surface soil analytical data detection summary. According to the Table the depth for the sample was 0 to 5 (without units), and Section 6.2.2 indicates that four surface soil samples were taken from a depth of 0 to 6 inches. Clarification regarding the depth of the samples should be made. Also, the Sample Type need to be described, the significance of the letter N should be defined.

## Section 7

15. **Page 7-3 Section 7.4** States "Chemicals detected above screening levels in the soil and groundwater at SWMU 6 and 7 have been detected in the background soils and groundwater at the former NASD located in western Vieques." See comment number 7.
16. **Table 7-1** Presents a surface soil analytical data detection summary. According to the Table the depth for the sample was 0 to 0.5, without units, and Section 7.2 indicates that ten surface soil samples were taken, although no depth is specified within the text, it is assumed that a surface soil sample is from a depth of 0 to 6 inches. Clarification regarding the depth of the samples should be made. Also, the Sample Type need to be described, the significance of the letter N should be defined.

## Section 8

17. **Page 8-2 Section 8.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 8 have been detected in the background soils and groundwater at the former NASD located in western Vieques." See comment number 7.
18. **Table 8-1** Presents a surface soil analytical data detection summary. According to the Table the depth for the sample was 0 to 5, without units, a correction should be made to the table to include the units of the depth. Clarification regarding the depth of the samples should be made. Also, the Sample Type need to be described, the significance of the letter N should be defined.

## Section 9

19. **Page 9-6 Section 9.4** At the third paragraph it is stated that the sample collected in June 2000 from an influent pipe of the sewage treatment lagoons had detection of general *chemistry analytes* among others. Clarification should be made regarding what is mean by general chemistry analytes.
20. **Page 9-6 Section 9.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 8 have been detected in the background soils and groundwater at the former NASD located in western Vieques." Since a work plan for a proposed background investigation of the soils and groundwater at AFWTF has been submitted to EPA and EQB, the above mentioned sentence should be eliminated from the report.
21. **Table 9-4** Presents a surface soil analytical data detection summary. According to the Table the depth for the sample was 0 to 0.5, without units, a correction should be made to the table to include the units of the depth. Section 9.2.2 indicates that sixteen surface soil samples were taken from the upper 0 to 6 inches. Clarification regarding the depth of the samples should be made. Also, the Sample Type need to be described, the significance of the letter N should be defined. The same applied to Table 9-5.
22. **Table 9-6** Presents the subsurface soil analytical data detection summary. According to Section 9.2.2 the surface soil samples were collected from 0 to 6 inches layer and subsurface soil samples were collected immediately below the liner, the depth of the samples was dependent on the depth to liner and varied from one location to another. At the line where the table was supposed to establish the depth of the sample all the samples were taken at a depth of 0 to 5 (no units). Clarification regarding the depth of the samples should be made. Also, the Sample Type need to be described, the significance of the letter N should be defined. The same applied to Table 9-7.
23. **Table 9-8** Presents the groundwater analytical data detection summary for SWMU 1. The Sample Type need to be described, the significance of the letter N should be defined.

## Section 10

24. **Page 10-3 Section 10.4** States that "Chemicals detected above screening levels in the soil and groundwater at SWMU 12 have been detected in the background soils and groundwater at the former NASD located in western Vieques." See comment number 7.



25. **Table 10-1** Presents the Surface Soil Analytical Data Detection Summary. No depth for the samples is presented. Clarification regarding the depth of the samples should be made. The Sample Type need to be described, the significance of the letter N should be defined.

#### Section 11

26. The third paragraph of page 11-2 at Section 11.3 states, "In only one of the soil samples, collected along the pipeline, was TPH detected at levels above the PREQB screening criterion of 100 mg/kg. According to Table 11-1 the four samples taken along the pipeline detected levels of TPH above the PREQB screening criterion. The information should be revised and corrected or clarified.
27. Sample type and sample depth at the Table 11-1 should be revised and clarified.

#### Section 12

28. **Page 12-2 Section 12.4** States that "Chemicals detected above screening levels in the soils AOC F in 2000 have been detected in the background soils at the former NASD located in western Vieques." See comment number 20.
29. **Table 12-1** Presents a surface soil analytical data detection summary. According to the Table the depth for the sample was 0 to 0.5, without units, a correction should be made to the table to include the units of the depth. Section 12.2 indicates that five surface soil samples were collected, it is inferred that the sample is taken from 0 to 6 inches. Clarification regarding the depth of the samples should be made. If the samples were taken using an EnCore® sampling device the proper annotation should be made. EnCore® samples are usually taken when the sample is going to be analyzed for VOCs and SVOCs, samples to be analyzed for metals and other parameters could not be taken using it. Also, the Sample Type need to be described, the significance of the letter N should be defined.

#### Section 13

30. **Page 13-3 Section 13.4** States that "Chemicals detected above screening levels in the soils AOC G have been detected in the background soils at the former NASD located in western Vieques." See comment number 20.
31. The **Section 13.2** specified that five surface soil samples (0 to 6 inches) were taken at AOC G. Table 13-1 presents the surface soil analytical data detection summary, the depth of the sample included is 0 to 0.5 inches, if the samples were taken using an EnCore® sample it must be clarified (see comment number 29). Sample type and sample depth at the Table 13-1 should be revised and clarified.

## Section 14

32. On page 14-9 the Photo 10 is used as evidence that one of the larger tanks at PI-6 was used as a water tank. The label reads, "WARNING Once this tank has been used for the storage of petroleum products it shall never be used for the storage of water." this label did not indicate that the tank was used for water storage. The evidences found at PI-6 for deducting the former uses of the tanks should be revised and better documented.
33. The depth of the three samples taken at PI-6 should be specified at the report.
34. For PI-6 the report concludes that chemicals above screening levels have been detected in the soils. It is proposed that once the background data have been obtained it will be compare to analytical data from PI-6. If the chemicals exceed background and screening levels an ecological and human risk assessment will be completed and if the assessment shows the risks to be acceptable, the site will be recommended for No Further Action (NFA). The action to be taken in case that the risk assessment shows no acceptable risk must be included at the report too. The same applies to PI-8, PI-10, PI-21, PI-22 and PAOC X.
35. At page 14-17 for PI-10 it is reported, "Dark colored soils were observed on portions of the enclosed areas. Evidence of limited solid waste disposal was also observed in the immediate vicinity". Then, at page 14-18 it was concluded that "...based on the lack of stained surface soils..." among others, no evidence of human activity was found. A clarification regarding this apparent contradiction should be made.
36. Visual inspection at the PIs and PAOCs shows no vegetation stress; nevertheless, no vegetation was sampled during the site investigation. It should be of concern the potential of bioaccumulation of some of the chemicals in plants, and the vegetation must be considered an exposure pathway at the ecological and human risk assessment.
37. At page 14-20 the third paragraph stated, "A stained area was observed immediately under the outfall of an open pipe projecting from the side of the pump house (Photo 29)(NAVFACENGCOM, 2003)." At the same time page 14-22 the second paragraph stated, " No surface staining or stressed vegetation was observed.". Both statements were referring to PI-11; apparently there is a discrepancy that needs to be clarified.
38. The presented description of the visual inspection of PI-12 is not enough to justify a no further action recommendation for the site. More detail on how the helicopter over flight observation was performed must be included. Information



like if the observations were made at simple sight or any visual aid was utilized during the investigation would be helpful.

39. The report does not proposed further actions to investigate the possible content of the drums founded at PI-22.
40. The Figures 14-3, 14-4, 14-5, 14-6, 14-7, 14-8, 14-9, 14-10 and, 14-11, were meant to show the location of the sampling points but they resulted dark and offer little information about the sampling locations.
41. At Section 14.3.2 a list of the sites to be inspected for potential munitions and explosives of concern is presented here. PI-13, PI-14, PI-18, PI-19, PAOC-EE and, PAOC-FF were recommended to "be inspected by a trained munitions expert to determine if any potential munitions are present on the surface at these sites during subsequent Phase I RFI for PIs and PAOCs or during the upcoming Background Investigation.". Meanwhile, at Sections 14.2.1 and 14.2.2 the sites PI-13, PI-14, PI-18, PI-19, PAOC-EE and, PAOC-FF are presented to "be further investigate during the Full RFI for potential munitions and explosives of concern.". Please clarify if the further investigations are going to be performed during the Full RFI, during the subsequent Phase I RFI (for which a Work Plan for eight recommended sites will be developed) or during the Background Investigation.
42. In general the Work Plan for the RFI was followed during the sampling activities. The report does not discussed changes to the work plan previously approved during field activities. The document was reviewed against the previously submitted work plans. Concrete comments regarding the conclusions and recommendations were not complete and are subject to the results obtained from a background investigation.
43. Revise the legend of the tables, it appears that the indication that represents the exceeds one or more of the screening criteria: PRG, ECO, SSL20 is not complete, for example, at Table 14-7 the symbol appear shaded and in the previous tables did not.
44. Section 14.3 included further action recommendations for all the sites investigated under the RFI. It must be included as another section or a Summary of Recommendations instead of being included as part of Section 14, which is dedicated to the Photo Identified Sites and Potential Areas of Concern.
45. It is suggested that the pages 1-6 (Section 1.2.3), 3-6 (Section 3.3.1.1), 14-9 (last sentence) and the acronym POL at page 14-32 should be defined.



COMMONWEALTH OF PUERTO RICO  
OFFICE OF THE GOVERNOR  
ENVIRONMENTAL QUALITY BOARD

ENCL. 6

~~FILE~~

August 9, 2004

Mr. Dale Carpenter, Chief  
Caribbean Section  
RCRA Program Branch  
US Environmental Protection Agency, Region II  
290 Broadway  
New York, New York 10007-1866

Dear Mr. Carpenter:

**Re: QA/QC Comments**  
***Draft Phase I RCRA Facility Investigation Report***  
***Former Atlantic Fleet Weapons Training Facility***  
***Vieques, Puerto Rico***

Enclosed you will find the Quality Assurance/Quality Control (QA/QC) evaluation of the document, "*Draft Phase I RCRA Facility Investigation Report*", Atlantic Fleet Weapons Training Facility (AFWTF), Vieques. As part of the evaluation the Quality Assurance Officer (QAO) completed the *General Data Evaluation Review* (see Appendix). Specifically, was evaluated the soil and groundwater data from January 19 through February 10, 2004; the data was evaluated based on the information provided at the Appendix H (Analytical Data Summary) & I (Data Quality Evaluation) of the report.

The QA/QC comments are submitted directly to EPA, since the AFWTF Project Manager is out of the office. If you have any questions regarding this matter, please contact Mrs. Marisol Marrero of my staff, at (787) 767-8181 extension 2842.

Cordially,

Julio Iván Rodríguez  
Director  
Land Pollution Control Area

c: Gloria M. Toro, Hazardous Waste Permit Division



*QA/QC Comments*  
*Draft Phase I RCRA Facility Investigation Report*  
*Former Atlantic Fleet Weapons Training Facility*  
*Vieques, Puerto Rico*

Background:

Atlantic Fleet Weapons Training Facility (AFWTF) is located on the eastern half of Vieques. The facility is comprised of approximately 14,600 acres that was owned by the Navy from the mid 1940s until 2003. The Navy for combat training and readiness utilized AFWTF, and on May 2003, the US Navy ceased training exercises. On January 2000, was signed a 3008(h) Administrative Order On Consent between the US Environmental Protection Agency and the US Department of the Navy. As part of the requirements of the Order the Phase I RCRA Facility Investigation (RFI) was conducted. The Phase I RFI was prepared to investigate 12 sites located at the AFWTF. Specifically, the purpose was determine the nature and the extent of potential releases of hazardous wastes, solid wastes and/or hazardous constituents from former Navy activities. The specific procedures for implementing the RFI are detailed in the, *Final Site Specific Work Plan for the Phase I RFI (June 12, 2003)* and in the *Final Master Work Plan (June 12, 2003)*.

Findings:

1. General Comments

- The Phase I RFI, presented the analytical data at the Appendix H and the Data Quality Evaluation at the Appendix I, but the raw data and QA/QC data were not included as part of the report. For this reason, our evaluation was limited to the following:
  - oversee transcription errors
  - methods compliance
  - parameters
  - number of samples with their respective depths
  - units of measurements
  - conversion factors
  - compliance with the Work Plan
  - concordance with the information presented at the report (Phase I RFI) and the Appendix H
- During the 2004 sampling activities, the SWMUs 6 & 7 and the AOCs A & F were not sampled. They were assessed using data of past investigations.
- A licensed chemist, with the authorization to practice the profession in Puerto Rico did not certify the sampling results presented at the report.

- At the AOC A, four (4) samples detected concentration levels above the screening criterion of 100 mg/Kg. However, no discussion or further action was recommended.

## 2. Work Plan Compliance

- For the SWMU 2, the Work Plan indicated (page 2-5) that the soil borings will be installed at 15 feet below land surface (bls). However, at the Phase I RFI Report at page 4-2, the company established that the soil borings were installed at 5 ft bls in the Above fuel Storage Tanks (AST) and at 4.5 ft bls in the fuel pipe support area.

## 3. Chain of Custody

- In general, some Chain of Custody's were cross out with a black marker and the information was unreadable. A general QA/QC practice indicates that when information is cross out it is suppose that the information be legible and it is necessary include the date and the initials of the person that perform the changes.

## 4. Appendix H Results

(The QA/QC reviewed some of the 2004 data for compare the information presented at the Phase I RFI versus the data presented at the Appendix H. Were reviewed method and parameters compliance and transcription of the results.)

- For the SWMU 1, the Phase I RFI established that the groundwater wells CGW1WM02, 03, and 04, were sampled for cyanides, sulfide and dioxins. At the Appendix H, only appears evidence of the sampling of the groundwater wells CGW1WM02 and 03 for the cyanide and sulfide parameters. Also, evidence of the results of the dioxin parameters were not included.
- At the Phase I RFI (SWMU 1), the Table 3-5 presented the dissolved metals results. These sampling results were not included at the Appendix H.
- In the Phase I RFI (SWMU 12) the Table 10.1, reported the detection of the semi-volatile compound Di-n-butyl phthalate in the soil samples CGW12SS02-RO1 and CGW12SS04-R01. However, the Appendix H does not show evidence of the detection of this compound.
- At the Phase I RFI (AOC G), the Table 13-1 reported the compound 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin with a concentration of 0.00000 mg/Kg at the sample CGAGSS04-R-01. However, at the Appendix H this compound was reported at a concentration of 3.6 pg/g. Verify the unit conversion.



Comments/Recommendations:

As mentioned before, the raw data and QA/QC data was not available for review. The Quality Assurance Officer (QAO) performed a limited evaluation using the *General Data Evaluation Review* according with the provided information. Nevertheless, the analytical data was validated and qualified by an independent third party firm. A summary of the evaluation was provided at Appendix I of the Phase I RFI.

Technically, it is recommended use the data according with the qualification of it. However, one aspect that must be considerate is that, there is no evidence that the data report was certified by a license chemist, it is a regulation requirement and is not acceptable at QA/QC matters.



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PREQB-LPRP-PRT-04

Date: September 2003

Revision No.: 2

Page 1 of 4

General Data Evaluation Review

Project: Draft Phase I RCRA Facility Inv. Report, AFWTF, Vieques  
Start Date: August 2, 2004  
Final Date: August 9, 2004  
Sampling Plan Title: Final Site Specific Work Plan, Phase I RCRA RFI  
Approval Date: 2003  
Reviewer: MMV

1. Is the data report certified by a licensed chemist, with the authorization to practice the profession in Puerto Rico? (Y/N) N
2. Were the analytical results reviewed as specified in the approved Plan (e.g. SAP, QAPP)? (Y/N) y - except for the SAP #
3. Were all the requested analysis completed?  
a. Were the samples analyzed by a method cited in the approved Plan (e.g. SAP, QAPP)? (Y/N) y (com # 1)
4. Did the Detection Limits/Quantitation limits meet project requirements? (Y/N) com # 2
5. Are the analytical results of the samples within the limits or action levels established for each parameter per the approved Plan? (Y/N) N
6. Were the units of measurement for a given chemical parameter used consistently throughout the report? (Y/N) y



7. Do the analytical results include the date that the chemical analysis was performed?

(Y/N) com # 2

8. Did the samples meet the holding time per each parameter?

(Y/N) com # 2

If not,

a. Indicate the sample(s) number and parameter(s) that was/were exceeded: \_\_\_\_\_

9. Does the data report include the chain of custody form?

(Y/N) y

If yes,

a. Was the chain of custody signed and completed properly?

(Y/N) N

b. Do the samples identified in the data report match with the samples identified in the chain of custody?

(Y/N) y

\*10. Does the data report include the following QC sample types:

a. field blank?

(Y/N) y

b. trip blank?

(Y/N) y

c. equipment blank?

(Y/N) y

d. method blank

(Y/N) com # 2

e. field duplicate sample?

(Y/N) y

f. matrix spike/matrix spike duplicate or MS/MSD?

(Y/N) com # 2

g. sample replicate?

(Y/N) com # 2

h. laboratory control sample?

(Y/N) com # 2

i. performance evaluation sample?

(Y/N) NA

j. other: \_\_\_\_\_

\* The above mentioned are not necessary for all analysis or sampling activities. It will depend on the design of the activities. Check the approved Plan.

11. Do any of the blanks or samples included in No. 10 detected contamination? (Y/N) com # 2

If yes,

a. Indicate the blank(s) or sample(s) that has contamination: \_\_\_\_\_

12. Does the data report include the calculation of the matrix spike Recovery percent (%R)?

If yes,

a. The data report includes the %R limits?

(Y/N) \_\_\_\_\_

b. Is the %R within the acceptable range?

(Y/N) \_\_\_\_\_

(Y/N) \_\_\_\_\_

} com # 2

13. Does the data report includes the calculation of the Relative Percent Difference (RPD) of MS/MSD? (Y/N)\_\_\_\_\_
- If yes,
- a. The data report includes the RPD limit? (Y/N)\_\_\_\_\_
- b. Is the RPD within the acceptable range? (Y/N)\_\_\_\_\_
14. For organic compounds, Is the calibration curve based on a linear calibration using response factors or calibration factors? (NA/Y/N)\_\_\_\_\_
- If yes,
- a. Does the data meet the RSD limits? (Y/N)\_\_\_\_\_
- If not,
- b. Indicate the calibration option used: \_\_\_\_\_  
(e.g. correlation coefficient, polynomial regression, etc.)
15. For inorganic compounds, Is the calibration curve based on a linear calibration using correlation coefficient? (NA/Y/N)\_\_\_\_\_
- If yes,
- a. Does the data meet the correlation coefficient of at least 0.995? (Y/N)\_\_\_\_\_
16. Does the Laboratory explain in the case narrative (if provided) any deviation of the results or an explanation of the data results (e.g. blanks)? (Y/N)\_\_\_\_\_

Com #2

Notes: \* As a general rule, metal containers should not be used for metals analytes, and plastic containers should not be used for organic analytes. Glass containers are not suitable for either boron and silica analysis.

$$\%R \text{ equation: } \%R = \frac{SSR - SR}{SA} \times 100$$

where: SSR = spiked sample result  
SR = unspiked sample result  
SA = spike amount

Matrix spike and matrix spike duplicate are required to be performed and the recoveries calculated on at least one sample out of each sample set of 20 samples of a similar matrix. However, the results on the MS and MSD are not by and of themselves used to qualify data.

$$\%RPD \text{ equation: } \%RPD = \frac{|MSR - MSRD|}{X} \times 100$$

where: MSR = matrix spike percent recovery  
MSRD = matrix spike duplicate percent recovery  
X = average of MSR and MSRD

RPD as a measure of precision works very well in those cases where the same level of analyte is present in all samples; however, it fails as a quantitative tool when varying levels are present.



- \* At least one equipment blank is prepared for each type of analyte group collected with each item of equipment.
- \* The %RSD is used as a measure of the linearity of the calibration. Large %RSD values indicate increasing deviation from linearity. The typical limits on the RSD are 20% for the GC and HPLC and 15% for analytes determined by the internal standard technique in the GC/MS methods.
- \* The SW-846 inorganic methods for metals may involve a single point calibration for ICP analysis and three point calibration for atomic absorption and graphite furnace analysis. There are not specific QC limits associated with the linearity of the calibration line.
- \* Specifications for calibration verification are generally given as a percentage difference (%D) from the test concentration, and vary with the specific method, depending on the quantitation technique. Usually used in pesticides analysis for concentration calculation on two (2) different columns.

Comments: Com #1: The analysis were completed. However, some evidences were not included at the Appendix A.

Y= yes

N= no

NA= not applicable

SAP= Sampling and Analysis Plan

QAPP= Quality Assurance Project Plan

Com #2: The raw data and QA/QC data were not included as part of the report. However, the data was validated and qualified by a third party firm. The summary of the Data Quality Evaluation was presented at the Appendix I of the Phase I Report.